Patients with headaches in the practice of a paramedic

(Pacjenci z bólem głowy w praktyce ratownika medycznego)

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Abstract – Introduction: Headache is a very diverse and common condition. Headache is a common cause of intervention by Emergency Medical Services Teams. It can be generally described as any pain that occurs within the skull. The headache can be sudden as well as gradually increasing. They may occur for a short period of time or be long-lasting, they may manifest themselves cyclically or in a specific situation (e.g. effort, stress) and they may be single episodes.
Aim of the study. The aim of the study was to present the most common forms of primary and secondary headache, selected issues from the epidemiology of these ailments.
Selection of material. The search was conducted in the Scopus database using the terms primary and secondary headache, epidemiology of headache, migraine, tension type pain 1996-2018. The literature found in the Google Scholar database was analysed for the highest number of quotations. The literature selected in this way was used as a material for the development of this paper.
Conclusions. Headache is usually caused by more than one factor. In the case of primary pain, the trigeminal system, i.e. the innervation of intracranial vessels and the dura mater by the trigeminal nerve, has the greatest influence on the discomfort experienced.

Key words **-** primary and secondary headache, epidemiology of headache, migraine, tension type pain, epidemiology.

Streszczenie – Wstęp. Ból głowy jest schorzeniem bardzo zróżnicowanym i powszechnym zarazem. Ból głowy jest częstą przyczyną interwencji Zespołów Ratownictwa Medycznego. Można go ogólne określić jako dowolny ból występujący w obrębie czaszki. Bóle głowy mogą mieć charakter nagły jak i stopniowo narastający. Mogą występować przez krótki okres czasu lub być długotrwałymi, mogą objawiać się cyklicznie lub w określonej sytuacji (np. wysiłku, stresu) jak i mieć charakter pojedynczych epizodów.
Cel pracy. Celem pracy było przedstawienie najczęstszych postaci bólu głowy typu pierwotnego i wtórnego, wybranych zagadnień z epidemiologii tych dolegliwości.
Dobór materiału. Poszukiwania przeprowadzono w bazie Scopus używając pojęć *ból głowy typu pierwotnego i wtórnego, epidemiologia bólu głowy, migrena, ból typu napięciowego* 1996-2018r. Znalezione piśmiennictwo w bazie Google Scholar przeanalizowano pod kątem największej liczby cytowań. Tak wyselekcjonowane piśmiennictwo posłużyło za materiał do opracowania niniejszej pracy.
Wnioski. Ból głowy jest zazwyczaj wywołany więcej niż jednym czynnikiem. W przypadku bólu o charakterze pierwotnym największy wpływ na odczuwany dyskomfort ma układ trójdzielno-naczyniowy, czyli unerwienie naczyń śródczaszkowych oraz opony twardej przez nerw trójdzielny.

Słowa kluczowe – ból głowy typu pierwotnego i wtórnego, epidemiologia bólu głowy, migrena, ból typu napięciowego, epidemiologia.

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I. INTRODUCTION

Headache is a very diverse and common condition. Headache is a common cause of intervention by Emergency Medical Services Teams. It can be generally described as any pain that occurs within the skull. These pains can be sudden as well as gradually increasing. They can occur for a short period of time or more often be long-lasting. In addition, headaches may manifest themselves cyclically or in a specific situation (e.g., exertion, stress) or as single episodes [1,2].

All headaches can be divided into primary and secondary. Primary (spontaneous) pain is caused by internal factors related to the construction and functioning of head organs, especially the brain and related blood vessels. However, (symptomatic) secondary pain is caused by exogenous factors [3,4].

The most common forms of primary type headache are[1,2,4]:

- Tension headache (69%),
- migraine (16%),
- idiopathic prickly headache (2%),
- exercise headache (1%),
- cluster headache (0.1%).

The most common causes of secondary headache are [1-3]:

- systemic infections (63%),
- head trauma (4%),
- vascular disorders (1%),
- brain tumor (0.1%),
- subarachnoid bleeding (less than 1.0%)

Most common headaches are temporary and contribute to the overall well-being of the patient. Only some of the pains may be life-threatening. In general, however, repeated and severe headaches should not be underestimated.

The cause of headache is most often caused by stimulation of peripheral pain receptors (nociceptive receptors) as a result of tissue trauma, visceral dilatation, damage to or too strong stimulation of the peripheral or central nervous system. Quite often, headache is caused by two or more factors simultaneously [5-7].

The headache may occur only in some skull structures such as the scalp, central meningeal artery, sinuses of the dura mater, sickle of the brain and some sections of soft tyre arteries. In primary pain, the discomfort is mostly caused by the trigeminal system, i.e. innervation of intracranial vessels and the dura mater by the trigeminal nerve [6].

From the study of syndrome I. Abu-Arafeh et al. shows that headache occurred at least once in life in 60% of children and adolescents [8]. Other studies carried out by Barea et al. show that headache occurred in 90% of adolescents up to the age of 18 years[9]. Migraine, i.e. spontaneous headache, occurs in about 10-15% of the total adult population and quite often its onset[10].

Currently as many as 280 types of headache have been described, which makes it difficult to introduce uniform procedures for diagnosis and medical management [6,11].

II. CLASSIFICATION OF HEADACHE

The most accurate classification of headaches was created by the International Headache Society (IHS). The work on creating a headache classification was started in 1985 by a team led by the Danish neurologist Jes Olensen. In 1988 the first classification of headaches was presented, which included a description of 65 cases. The International Classification of Headache Disorders (2nd edition - ICHD-2) was published in 2004. It included 280 cases [6,11].

The latest edition of the IHS classification comes from the year 2013 and has been marked with the symbol ICHD 3 - beta. The authors of this classification tried to make it consistent with another international classification - ICD 11, promoted by the World Health Organization. The ICHD 3 - beta classification, similarly to ICDH 2, divides all pains into three basic types, i.e. [12]:

- primary headaches,
- secondary headaches,
- painful cranial nerve neuropathy, other facial pains and other headaches.

The ICDH-3 beta classification includes a fourth part under the title 'Appendix'. This part includes diagnostic criteria not fully recognised by the scientific community. The methods of diagnosing episodes of headache such as infantile colic, alternating paediatric hemiplegia and vestibular migraine are presented [11].

III. MIGRENA

According to the International Classification of Headaches, spontaneous pain includes four groups of these ailments[11]:

- migraines,
- tension pains,
- Trigeminal Autonomic Cephalalgias (TAC),
- other primary headaches.

Migraine is the most common type of primary headache. In the range of migraine, they have been identified[12]:

- migraine without aura,
- migraine with aura,
- chronic migraine,
- migraine's likely,
- episodic syndromes that can be linked to migraine.

In practice, migraine without aura and migraine with aura are most common. Migraine without aura is characterized by recurrent headaches (at least 5 cases), which without medication last from several hours to 3 days. Moreover, most often the pain is located on one side of the head and has a pulsating character. Its intensity is moderate or significant. Migraines without aura may be accompanied by such phenomena as hypersensitivity to stimuli (light, sound), nausea and vomiting.

Migraine with aura occurs slightly less frequently and is less prone to recurrence than migraine without aura. It is characterized by visual disturbances in the form of flashing light or spots, or deterioration of vision, sensory disturbances (tingling, numbness), which are temporary and reversible. The aura symptoms last from 5 to 60 minutes. In addition, there is a headache typical of migraine without aura.

Chronic migraine is characterized by a relatively long period and frequent pain, which lasts at least half a month and has been repeated for at least 3 months. The most common complication is migraine without aura and results from rash or excessive intake of analgesics or anti-migraine preparations. [13-16]

Probable migraine is characterized by only some symptoms of migraine without aura or migraine with aura. Therefore, it is difficult to precisely qualify it for a specific type of migraine. The symptoms of probable migraine have about one third of all patients with migraine. Factors that may increase the risk of migraine include [1,3,13,16,17]:

- frequent and prolonged stress-relief phase,
- foods that are hard to digest or allergic, e.g. dairy products, cocoa,
- drinking alcohol, drugs or stimulants,
- major changes in the hormonal economy,
- effort and fatigue,
- too long or too short a point, insomnia,
- taking medication, especially when it affects hormones
- the use of contraceptives,
- large and rapid changes in the weather, especially pressure and sunshine,
- feeling hungry,
- staying in the mountains.

Migraine is more common among people who are generally in a period of general physical and mental deterioration. The stress experienced has a particularly high impact. Stress, according to the concept of Lazarus and Folkman, is not a simple response of the body to any external situation, but such a state of the individual in which a person, as a result of the first evaluation, classifies the given events as unpleasant. [18]

The definition of stress given by Kocowski, who described stress as a set of processes taking place in the body and nervous system, which is a human reaction to the occurrence of stimuli or difficult, surprising, unpleasant or harmful situations, which are called stressors, has been adopted as the most adequate term in this paper. [19].

Physiological effects of stress appear in a very different way, depending on individual health characteristics of an individual and on the dynamics and intensity of stress, conditions coexisting with the stressor and on the duration of stress. Hence, some of the stresses are referred to by separate names - traumatic stress, chronic stress. Traumatic stress is the result of sudden experience of an event that causes deep psychological trauma - e.g. by participating in a traffic accident, witnessing the death of a loved one, etc. It happens that in such a situation emotions completely block rational behaviour and people lose their ability to control themselves. Chronic (permanent) stress is a description of a situation when a person is exposed to stress for a very long time and must necessarily go to the stage of exhaustion of defensive forces. [20,21]

Changes in the functioning of the human body and negative, possible health consequences are presented in summary form in Table 1.

IV. TENSION-TYPE PAIN

The second type of headache is tension-type pain. This condition affects 30-70% of the total population. The following types of tension-type pain are distinguished [23]:

- episodic, rare,
- episodic pain that occurs frequently,
- chronic pain.

Table 1. Physiological reactions of the human body to stressful events [22]

Changes in the organism	Disease effect
increase in certain hormones in blood and urine	hyperthyroidism, increase in blood LDL levels
increase in blood glucose	diabetes mellitus
pulse acceleration	myocardial infarction, angina pectoris
BP elevation	udar mózgu
increased secretion of sweat, digestive juices	stomach ulcers, gastric disorders, colorectal hypersensitivity syndrome
breathing difficulties	asthma, hypoxia
the alternating feeling of hot and cold - chills	anxiety

Episodic pain occurs less than once a month. Episodic pain occurs less than 15 times a month. However, chronic pain occurs at least 15 times a month.

Tension type pain occurs simultaneously on both sides and is uniform (non-pulse). Most often it is low or average pain and its symptoms increase during physical effort. It is not accompanied by nausea. Most often, chronic tension pain is an effect of episodic pain development. The pain is difficult to diagnose for people who take large amounts of drugs or abuse alcohol.

Another type of headache is trigeminal-autonomous headache - TTH, among which cluster headache stands out. A characteristic feature is intermittent, short-term, very severe unilateral headache with accompanying vegetative disorders. The headache is described in various ways - as acute, agitating, puncturing, cutting, piercing or stabbing; however, it is different from pulsating migraine pain. It reaches its peak within 10-15 minutes and remains, still very strong, on average for one hour [1,2,24].

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